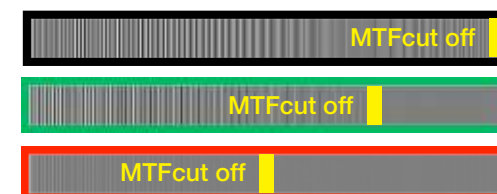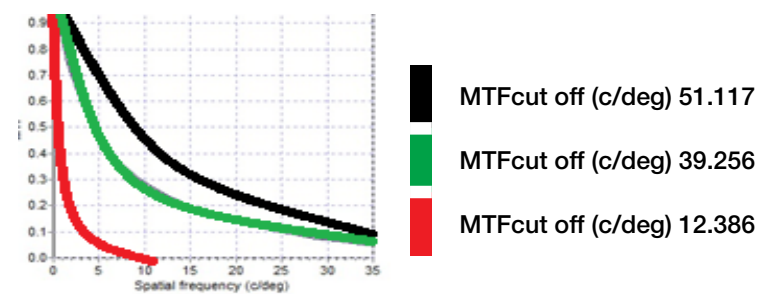## Clinical applications

Cataract surgery	Objective diagnosis and quantification of lenses opacifications. Screening, selection, maturity, decision making, pseudo accommodation, PCO.
Refractive surgery	Improvement, accuracy and optimization of post refractive results. Selection, anticipation, retreatement, multifocal, decision making.
Tear film analysis and influence	Screening/Monitoring dry eye syndrome, tear film quality, drops efficiency, ...
Treatment efficiency objective measurement	Yag efficiency, haze healing, drops adapted to the dry eye, MF IOL or MF lasik treatment?, ...
Monitoring the eye transparency/ heal during the patient life	Corneal opacification, cataract, vitreous …
Diagnosis support complaints management. Objective optical quality.	Halos and glares, scattering light effects, objective visual acuity...
Optical evaluation of any intra ocular and corneal lenses	IOL, ICL, Multifocal, contact lenses, corneal lenses, …

Data analysis

The **OSI** (Objective Scattering Index, **NORMALIZED** and **UNIQUE** in the world, related and proper to the OQAS technology) is an objective and also educational evidence that can be shared and described to the patient.

OSI < 0,5 Better than Normal	0SI = 0,5 Normal	0,5 < OSI < 1 In the Normal	OSI > 1 Abnormal

Optical resolution of the eye and contrast sensitivity (MTF, MTFcut off and PVA)

- MTFcut off (c/deg) 51.117
- MTFcut off (c/deg) 39.256
- MTFcut off (c/deg) 12.386

MTFcut off (c/deg)	15	24	30	37,5	60
PVA Snellen	20/40	20/25	20/20	20/16	20/10
PVA Decimal	0.5	0.8	1.0	1.25	2.0

> The higher the MTFcut off (end curve), the best in the eye resolution and in the Predicted Visual Acuity (PVA).

Clinical data

OSI	Objective Scattering Index
PSF	Point Spread Function - Spreading of the light intensity on the focus plane
Width (arc min) 50 %	PSF arc size at 50 %
Width (arc min) 10 %	PSF arc size at 10 %
MTF	Modulation Transfer Function – Losing contrast (%) curve linked to the image detail level (spatial frequency - c/deg - cycle per degree)
MTFcut off (c/deg)	MTF end curve spatial frequency (contrast level 0%)
PVA	Predicted Visual Acuity
Predicted VA 100 %	PVA 100 % contrast level
Predicted VA 20 %	PVA 20 % contrast level
Predicted VA 9 %	PVA 9 % contrast level
Pseudo Accommodation curve	Retinal image quality curve linked to the target position
Accommodative Range	Residual of depth of focus calculation
Tear Film Analysis curve	Retinal image quality curve as a function of time

Technical and general specifications

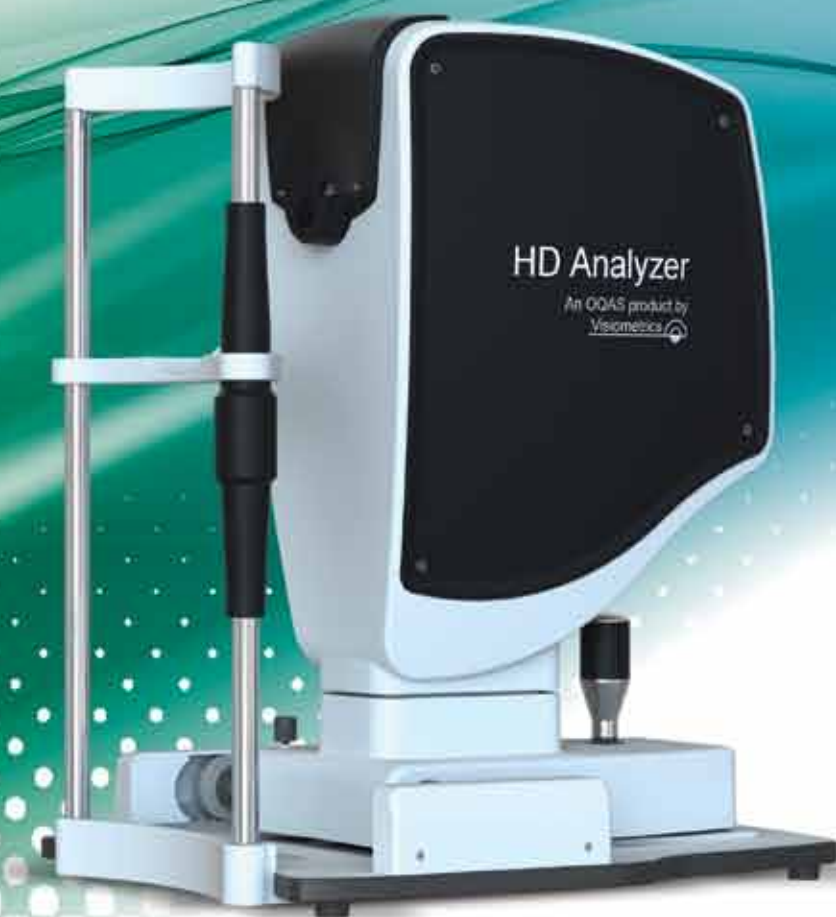|	
Class	IIa
Technology	OQAS (Optical Quality Analysis System)
Type	Light Scatter Analyzer
Measurement range / Reproducibility / Accuracy	+5 D to -8 D S.E. (higher ametropia including astigmatism can be neutralized with an additional lens) +/- 0.25 D ; +/- 0.25 D
Natural pupil diameter measurement	Automatic ; Accuracy: +/- 0.5 mm (for an 8 mm pupil)
Artificial pupil diameter	2 to 7 mm
Image capture time	240 ms
LASER wavelength	780 nm
Laser power selection	Automatic ; Max LASER power at the pupil plane: 2.8 mW
Focus	Automatic
Dimensions (cm)	41.5 (L)*35 (W) * 53 (H)
Weight (kg)	20
Recommended working space (m2)	2.5
External power supply	Input: 100-240 VAC, 50-60 Hz, max. 1.0 A Output: 12 V DC, 3.5 A, 42 W
Operating temperature	+10 ºC to +35 ºC
Operating relative humidity	30% to 90%

HD Analyzer
(3rd Generation of OQAS technology)

Included:	• HD Analyzer™ unit • PC or laptop with specific hardware and software installed and ready to operate the device. • Flat 15" or 17" monitor (only for PC). • USB cable / External power supply / Power supply cable
Optional	• Electric elevating table • Printer • Network configuration
Conformity assessment:	Agencia Española de Medicamentos y Productos Sanitarios
Manufacturer:	Visiometrics S.L, c/ Argenters, 8 – Edifici nº 3, Parc Tecnològic del Vallès, 08290 Cerdanyola del Vallès, Barcelona, SPAIN

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CE 0318

March 2017

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HD Analyzer

OQAS Technology - Optical Quality Analysis System

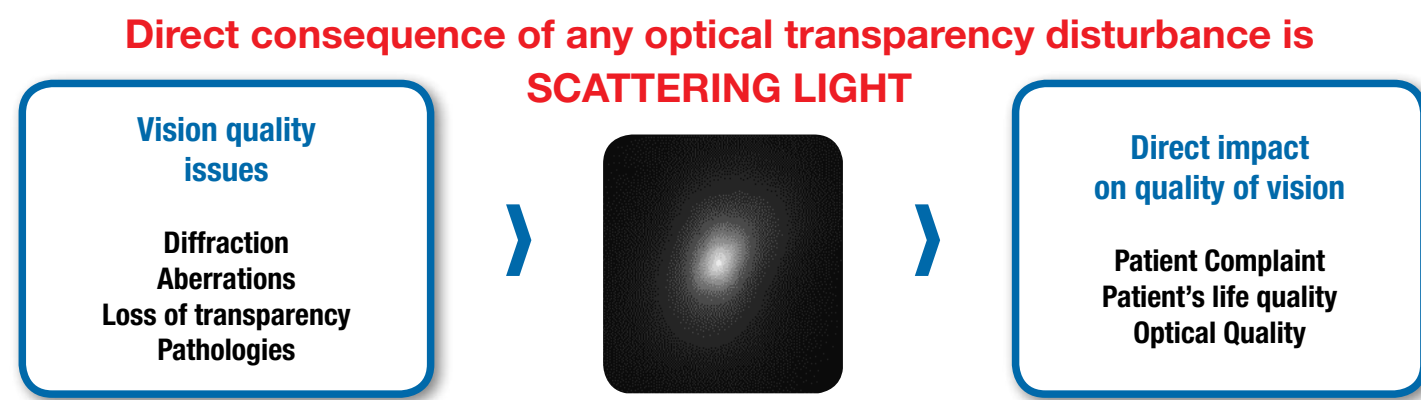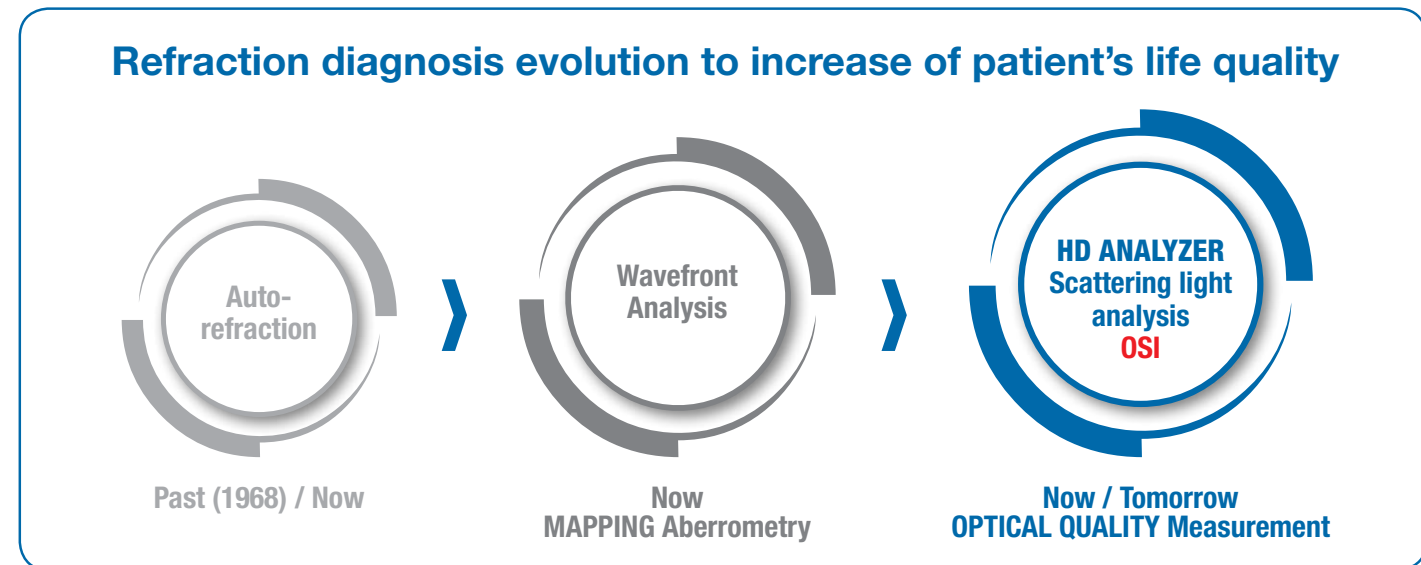| **DLS** Dysfunctional Lens Syndrome Management & Cataract Surgery	**Dry Eye** Management & Refractive Surgery	Subjective Visual Acuity vs. Best Focus Point & Eye Resolution	Patient's Expectations Management

VISUAL ACUITY 20/20

DIFFERENT THAN VISION QUALITY

"Regardless of visual acuity and patient feedback, how could I measure the quality of the patient's eye?"
The solution is HD ANALYZER

"Understanding visual performance limitations of the patient's eye must be the necessary initial step before any surgery or treatment plan."

"From the tear film to the retina, everything could impact the optical quality of patient's eye…"

HD Analyzer
An OQAS product by Visiometrics

Objective vs Subjective	Understand	Anticipate	Select	Monitor	Manage

Refraction diagnosis evolution to increase of patient's life quality

- Auto-refraction — Past (1968) / Now
- Wavefront Analysis — Now MAPPING Aberrometry
- HD ANALYZER Scattering light analysis OSI — Now / Tomorrow OPTICAL QUALITY Measurement

Direct consequence of any optical transparency disturbance is SCATTERING LIGHT

Vision quality issues
Diffraction
Aberrations
Loss of transparency
Pathologies

Direct impact on quality of vision
Patient Complaint
Patient's life quality
Optical Quality

Clinical cases

Cataract (without vitreous or corneal issues)

OSI = 1,5 Starting cataract	OSI = 2,0 / 2,5 Surgical criteria	OSI = 4 Mature cataract

Independent of the subjective LOCS III classification and lens appearance through the Slit-Lamp. Correlated to the clinical assessment of the presence of a cataract.

Surgery plan management
Patient complains, S/L examination is not revealing, visual acuity at 8/10. HD A measurement shows a cataract on OD and a cataract in early stage on OS, the OS will be track and re-check many months later.

OSI: 2.1   OSI: 1.1

Refractive surgery – manage patient expectations

Pre-OP measurement when the patient is wearing their own glasses or contact lenses

Daily vision quality

Patient A
Excellent quality of vision (**better than normal**) with the actual corrective equipment. Probably **high expectations** about the post-op results
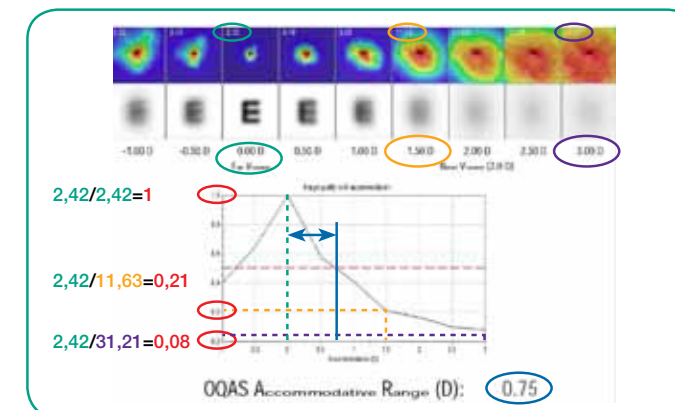
Patient B
Average quality of vision (**in the normal**) with the actual corrective equipment. Probably **better tolerance** about the post-op results
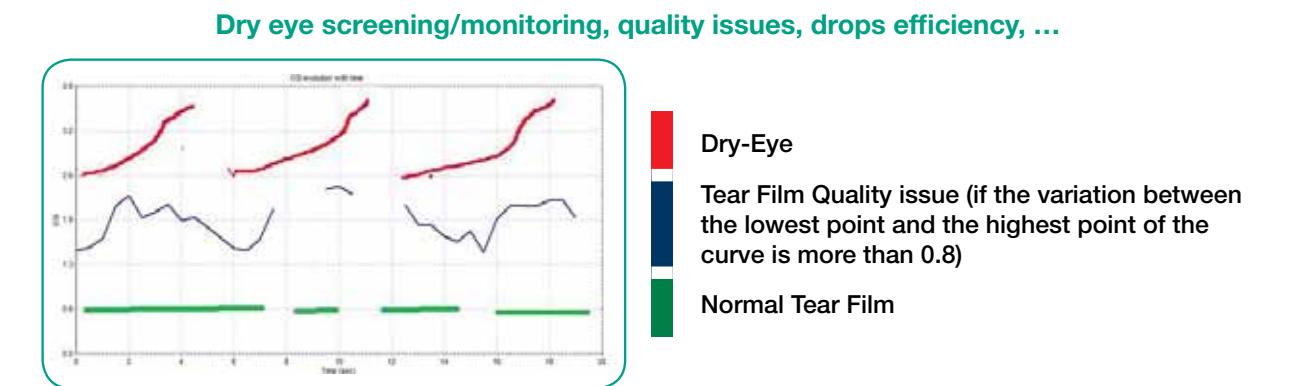
Pseudo accommodation

PSF Measurements done by the defocus of the target with a 0,5 D step

Depth of focus determination

2,42/2,42=1
2,42/11,63=0,21
2,42/31,21=0,08

OQAS Accommodative Range (D): 0.75

Tear film analysis

Analysis of the Tear Film influence on the image quality, TF OSI variation measurement during 20s

Dry eye screening/monitoring, quality issues, drops efficiency, …

- Dry-Eye
- Tear Film Quality issue (if the variation between the lowest point and the highest point of the curve is more than 0.8)
- Normal Tear Film

Refractive surgery – post-op residual cylinder management

Influence of a residual astigmatism measured by the device

Retreatment needs

With corrected cylinder (trial lens)
Without the corrected cylinder
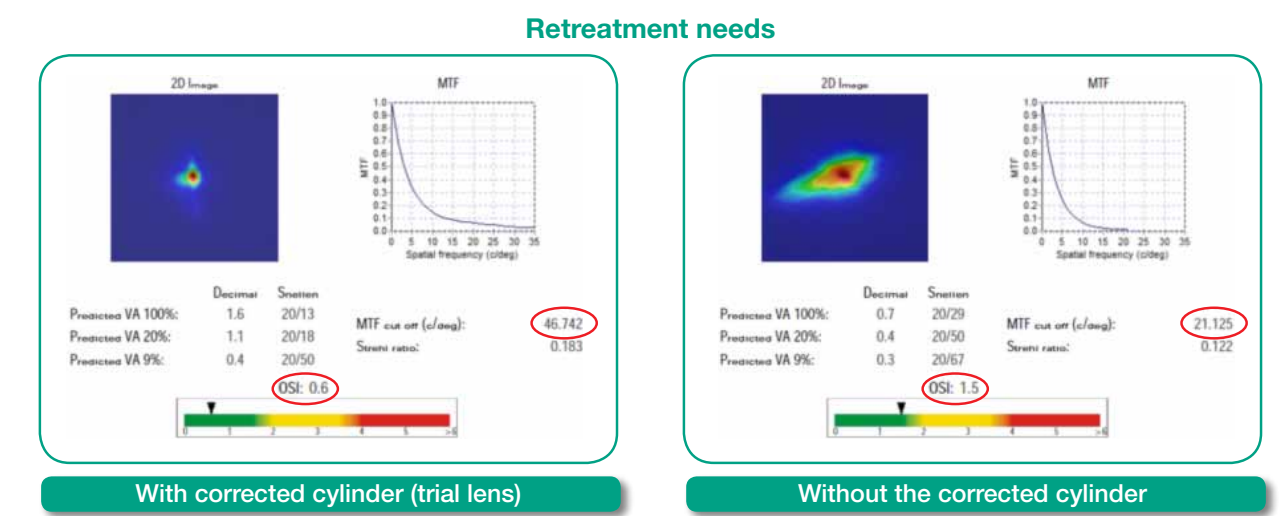
Night vision evaluation

Study and measure of the optical quality of the eye in different light conditions.
Decrease of the optical resolution and scattering light increase.

Daily optical quality
Night optical quality